Claims

1. Catalyst comprising at least one amorphous or poorly crystallized matrix of the oxide type, at least one element of group VB, at least zeolite Y not globally dealuminized, having a unit cell parameter which is greater than 2.438 nm and a global SiO2/Al2O3 ratio of less than 8, and at least one promoter element chosen from the group consisting of boron, phosphorus and silicon.

2. Catalyst according to claim 1, in which the zeolite Y has a skeleton molar SiO_2/Al_2O_3 ratio greater than or equal to the global SiO_2/Al_2O_3 molar ratio and less than about 21.

3. Catalyst according to one of claims 1 or 2, in which the element of group VB is niobium.

4. Catalyst according to one of claims 1 to 3, also comprising at least one element chosen from the elements of group VIB and group VIII.

5. Catalyst according to claim 4, in which the element of group VIB is molybdenum or tungsten and the element of group VIII is iron, cobalt or nickel.

6. Catalyst according to one of claims 1 to 5, also comprising at least one element chosen from group VIIA.

7. Catalyst according to one of claims 1 to 6, comprising, in % by weight with respect to the total weight of the catalyst:

- 0.1 to 99.8% of at least one zeolite Y not globally dealuminized,,
- 0.1 to 60% of at least one element chosen from group VB,
- 0.1 to 99% of at least one amorphous or poorly crystallized porous mineral matrix of the oxide type
- 0.1 to 20% of at least one promoter element chosen from the group consisting of boron, phosphorus and silicon, not including the silicon optionally contained in the zeolite,

it being possible for the catalyst also to comprise:

- 0 to 60% of at least one element chosen from the elements of group VIB and group VIII and
- 0 to 20% of at least one element chosen from group VIIA, preferably fluorine.

8. Process for the preparation of a catalyst according to one of claims 1 to 7 in which:

a) a solid called the precursor and comprising at least the following compounds is dried and weight: at least one matrix, at least one zeolite Y not globally dealuminized, optionally at least one promoter element chosen from the group consisting of boron, phosphorus and silicon, optionally at least one element chosen from the elements of group VIB and group VIII, and optionally at least one element of group VIIA, the mixture being preferably shaped,

b) the dry solid obtained in stage a) is calcined at a temperature of at least 150°C,

c) the precursor solid defined in stage b) is impregnated with a solution comprising at least one element of group VB, preferably niobium,

d) the moist solid is left to stand in a damp atmosphere at a temperature of between 10 and 120°C,

e) the moist solid obtained in stage d) is dried at a temperature of between 60 and 150°C,

f) the dried solid of stage e) is calcined in dry air at a temperature of at least 150°C, preferably at least about 250°C.

9. Process according to claim 8 for the preparation of a catalyst, in which at least one calcination is carried out at the end of any one of the preparation stages at a temperature of at least 150°C.

10. Preparation process according to one of claims 8 or 9, in which the sulphurization of the catalyst is carried out under a stream of a hydrogen/hydrogen sulphide mixture or under pure hydrogen sulphide at a temperature of between 150 and 800°C.

11. Use of the catalyst according to one of claims 1 to 7 or prepared according to one of claims 8 to 10 in a process for hydrocracking hydrocarbon feeds.

12. Use according to claim 11, in which the temperature is greater than 200°C, the pressure is greater than 0.1 MPa, the amount of hydrogen is at least 50 litres of hydrogen per litre of feed, and the hourly volume velocity is between 0.1 and 20 volumes of feed per volume of catalyst and per hour.

13. Use according to claim 11 in a gentle hydrocracking process, in which the conversion level is less than 55%, the temperature is greater than 230°C, the pressure is greater than 2 MPa and less than 12 MPa, the amount of hydrogen is at least 100 litres of hydrogen per litre of feed, and the hourly volume velocity is between 0.15 and 10 volumes of feed per volume of catalyst and per hour.

14. Use according to claim 11 in a hydrocracking process, in which the conversion is greater than 55%, the temperature is greater than 230°C, the pressure is greater than 5 MPa, the amount of hydrogen is at least 100 litres of hydrogen per litre of feed, and the hourly volume velocity is between 0.15 and 10 volumes of feed per volume of catalyst and per hour.

15. Use according to one of claims 11 to 14, in which a hydrotreatment stage is carried out, at a temperature between 350°C and 460°C, a pressure of at least 2 MPa, with an amount of hydrogen of at least 100 litres of hydrogen per litre of feed and an hourly volume velocity of between 0.1 and 5 volumes of feed per volume of catalyst and per hour, and prior to the hydrocracking stage.